

WHAT IS CLAIMED IS:

1. An image forming apparatus comprising:

an image carrier which has a predetermined center of rotation and on which a toner image is formed by developing an electrostatic latent image formed thereon with a toner;

a developing device which has a developing roll that rotates while carrying a toner on the surface thereof and that conveys the toner to a developing position at which the electrostatic latent image on the image carrier is developed by the toner;

an intermediate transfer member which is disposed in an approximately flat shape and circulatingly moves, onto which the toner image on the image carrier is primarily transferred at a predetermined transfer position, and which has a second transfer position at which the toner image is secondarily transferred onto a transfer material; and

a fixing unit which fixes the toner image on the transfer material, which has undergone the transfer of the toner image, thereon at a predetermined fixing position,

wherein both the image carrier and the developing roll are disposed in a triangle region formed by the approximately flat-shaped intermediate transfer member, a vertical line in contact with the intermediate transfer member, and a horizontal line in contact with the intermediate transfer member.

2. An image forming apparatus according to claim 1,

comprising a rotary developing device that has a plurality of developing units, which are disposed about a predetermined center of rotation thereof, and in which respective color toners are accommodated, and develops an electrostatic latent image formed on the image carrier by a developing unit which is faced to the image carrier by the rotation of the rotary developing device, wherein the developing roll is a developing roll that constitutes a developing unit used in the development executed this time of the plurality of developing units constituting the rotary developing device.

3. An image forming apparatus according to claim 1, comprising:

a first support roll that supports the intermediate transfer member from the inside thereof at the secondary transfer position; and

a second support roll that supports the intermediate transfer member from the inside thereof at a position on the upstream side of the secondary transfer position in a moving direction of the intermediate transfer member and forms a short side of the approximately flat-shaped intermediate transfer member which extends upstream of a transfer material conveying direction in cooperation with the first support roll,

wherein the primary transfer position is disposed in a range of about two third a long side portion of the intermediate transfer member where the intermediate transfer member moves in a direction in which the intermediate transfer member

approaches the second support roll, upstream of the long side portion in the moving direction of the intermediate transfer member.

4. An image forming apparatus according to claim 1, comprising:

a first support roll that supports the intermediate transfer member from the inside thereof at the secondary transfer position; and

a second support roll that supports the intermediate transfer member from the inside thereof at a position on the upstream side of the secondary transfer position in a moving direction of the intermediate transfer member and forms a short side of the approximately flat-shaped intermediate transfer member which extends upstream of a transfer material conveying direction in cooperation with the first support roll,

wherein the image carrier is disposed so as to come into contact with a long side portion of the intermediate transfer member along which the intermediate transfer member moves in a direction in which the intermediate transfer member approaches the second support roll at approximately the center of the long side portion over a predetermined region of the intermediate transfer member in the moving direction thereof.

5. An image forming apparatus according to claim 1, comprising:

a partial conveying path along which the transfer

material passes through the secondary transfer position and the fixing position approximately vertically toward a discharge unit disposed in an upper portion of the image forming apparatus; and

discharge members that discharge the transfer material toward the discharge unit,

wherein the discharge members are disposed downstream of a second horizontal line that is in contact with the intermediate transfer member on the most downstream side thereof in a transfer material conveying direction, and

wherein the fixing unit comprises a pair of rotating members that rotate while clamping therebetween a transfer material, which has undergone the transfer of a toner image, and fix the toner image on the transfer material formed thereon, and the pair of overall rotating members are disposed upstream of the second horizontal line in the transfer material conveying direction.

6. An image forming apparatus comprising:

an image carrier which has a predetermined center of rotation and on which a toner image is formed by developing an electrostatic latent image formed thereon with a toner;

a rotary developing device that has a plurality of developing units, which are disposed about a predetermined center of rotation thereof, and in which respective color toners are accommodated, and develops the electrostatic latent image on the image carrier by a developing unit which is faced

to the image carrier by the rotation of the rotary developing device;

an intermediate transfer member which is disposed in an approximately flat shape and circulatingly moves, onto which the toner image on the image carrier is primarily transferred at a predetermined transfer position, and which has a second transfer position at which the toner image is secondarily transferred onto a transfer material;

a fixing unit which fixes the toner image on the transfer material, which has undergone the transfer of the toner image, thereon at a predetermined fixing position; and

a conveying path along which the transfer material passes through the secondary transfer position and the fixing position and which has a partial conveying path extending approximately vertically or approximately horizontally between the secondary transfer position and the fixing position,

wherein the primary transfer position is disposed on a side where the approximately flat-shaped intermediate transfer member moves in a direction in which the intermediate transfer member approaches the secondary transfer position,

wherein the secondary transfer position is disposed upstream of a straight line in a transfer material conveying direction, which is approximately vertical to a direction in which the partial conveying path extends, of a horizontal line and a vertical line that pass through the center of rotation of the image carrier, and

wherein the fixing position is disposed upstream of a

straight line in the transfer material conveying direction, which passes through the center of rotation of the rotary developing device and the center of rotation of the image carrier.

7. An image forming apparatus comprising:

an image carrier which has a predetermined center of rotation and on which a toner image is formed by developing an electrostatic latent image formed thereon with a toner;

a multi-color developing device which has a plurality of developing units disposed thereon and accommodating respective color toners and develops the electrostatic latent image on the image carrier by a developing unit selected from the plurality of developing units;

an intermediate transfer member which is disposed in an approximately flat shape and circulatingly moves, onto which the toner image on the image carrier is primarily transferred at a predetermined transfer position, and which has a second transfer position at which the toner image is secondarily transferred onto a transfer material;

a fixing unit which fixes the toner image on the transfer material, which has undergone the transfer of the toner image, thereon at a predetermined fixing position; and

a conveying path along which the transfer material passes through the secondary transfer position and the fixing position and which has a partial conveying path extending approximately vertically or approximately horizontally between the

secondary transfer position and the fixing position,

wherein the primary transfer position is disposed in an intermediate portion on a side where the flat-shaped intermediate transfer member moves in a direction in which the intermediate transfer member approaches the secondary transfer position,

wherein the secondary transfer position is disposed upstream of a straight line in a transfer material conveying direction, which is approximately vertical to a direction in which the partial conveying path extends, of a horizontal line and a vertical line that pass through the center of rotation of the image carrier, and

wherein the fixing position is disposed upstream in the transfer material conveying direction of a straight line, which is approximately vertical to a direction in which the partial conveying path extends, of a horizontal line and a vertical line that are in contact with the most downstream portion of the intermediate transfer member in the conveying direction thereof.

8. An image forming apparatus comprising:

an image carrier which has a predetermined center of rotation and on which a toner image is formed by developing an electrostatic latent image formed thereon with a toner;

a multi-color developing device which has a plurality of developing units disposed thereon and accommodating respective color toners and develops the electrostatic latent

image on the image carrier by a developing unit selected from the plurality of developing units;

an intermediate transfer member which is disposed in an approximately flat shape and circulatingly moves, onto which the toner image on the image carrier is primarily transferred at a predetermined transfer position, and which has a second transfer position at which the toner image is secondarily transferred onto a transfer material;

a fixing unit which has a pair of rotating members, clamps the transfer material, onto which the toner image has been transferred, between the pair of rotating members at a predetermined fixing position, and fixes the toner image on the transfer material; and

a conveying path along which the transfer material passes through the secondary transfer position and the fixing position and which has a partial conveying path extending approximately vertically or approximately horizontally between the secondary transfer position and the fixing position,

wherein the image carrier is disposed at a position at which the image carrier is in contact with the approximately flat-shaped intermediate transfer member on the side thereof where the intermediate transfer member moves in a direction in which the intermediate transfer member approaches the secondary transfer position as well as the image carrier is disposed downstream of a first straight line which is approximately vertical to a direction, in which the partial conveying path extends, of a horizontal line and a vertical

line that are in contact with a portion of the intermediate transfer member on the most upstream side thereof in a transfer material conveying direction, and

wherein the pair of rotating members are disposed upstream of a second straight line which is approximately vertical to the direction, in which the partial conveying path, of a horizontal line and a vertical line that are in contact with a portion of the intermediate transfer member on the most downstream side thereof in the transfer material conveying direction.

9. An image forming apparatus according to claim 8, comprising discharge members that discharge the transfer material, on which the toner image has been fixed by the fixing unit externally of the image forming apparatus, wherein the discharge members are disposed upstream of the second straight line in the transfer material conveying direction.

10. An image forming apparatus according to claim 8, comprising a cleaning member that is in sliding contact with the image carrier downstream of a portion thereof which faces the primary transfer position in a rotating direction of the image carrier, wherein the cleaning member is disposed downstream of the first straight line in the transfer member conveying direction.

11. An image forming apparatus according to claim 8,

comprising a charging member that charges a portion of the image carrier before an electrostatic latent image is formed in the portion, wherein the charging member is disposed downstream of the first straight line in the transfer member conveying direction.

12. An image forming apparatus according to claim 8, wherein the multi-color developing device is a rotary developing device that has a plurality of developing units, which are disposed about a predetermined center of rotation thereof, and develops the electrostatic latent image on the image carrier by a developing unit which is faced to the image carrier by the rotation of the rotary developing device, and the developing position, at which the electrostatic latent image on the image carrier is developed by the rotary developing device, is disposed downstream of the first straight line in the transfer material conveying direction.

13. An image forming apparatus according to claim 8, comprising an exposure member that forms the electrostatic latent image on the image carrier by exposing the image carrier, wherein the exposure member is disposed downstream of the first straight line in the transfer member conveying direction.

14. An image forming apparatus according to claim 8, wherein the multi-color developing device is a rotary developing device that has a plurality of developing units,

which are disposed about a predetermined center of rotation thereof, and develops the electrostatic latent image on the image carrier by a developing unit which is faced to the image carrier by the rotation of the rotary developing device, and the center of rotation of the rotary developing device is disposed downstream of the first straight line in the transfer member conveying direction.

15. An image forming apparatus comprising:

an image carrier which has a predetermined center of rotation and on which a toner image is formed by developing an electrostatic latent image formed thereon with a toner;

a multi-color developing device which has a plurality of developing units disposed thereon and accommodating respective color toners and develops the electrostatic latent image on the image carrier by a developing unit selected from the plurality of developing units;

an intermediate transfer member which is disposed in an approximately flat shape and circulatingly moves, onto which the toner image on the image carrier is primarily transferred at a predetermined transfer position, and which has a second transfer position at which the toner image is secondarily transferred onto a transfer material;

a fixing unit which fixes the toner image on the transfer material, which has undergone the transfer of the toner image, thereon at a predetermined fixing position; and

a conveying path along which the transfer material passes

through the secondary transfer position and the fixing position and has a partial conveying path extending approximately vertically or approximately horizontally between the secondary transfer position and the fixing position,

wherein the intermediate transfer member is disposed so as to incline at an inclining angle of 30° or more to 50° or less with respect to a straight line which extends approximately in parallel with a direction in which the partial conveying path extends, of a horizontal line and a vertical line,

wherein the image carrier is disposed on a side where the approximately flat-shaped intermediate transfer member moves in a direction in which the intermediate transfer member approaches the secondary transfer position, and

wherein the secondary transfer position is disposed upstream of a straight line in a transfer material conveying direction, which is approximately vertical to a direction in which the partial conveying path extends, of a horizontal line and a vertical line which pass through the center of rotation of the image carrier.

16. An image forming apparatus according to claim 6, comprising a transfer material accommodation unit that accommodates transfer materials, and the transfer material accommodation unit is disposed in such a direction that the transfer materials accommodated therein are approximately vertical to the direction in which the partial conveying path

extends.

17. An image forming apparatus according to claim 7, comprising a transfer material accommodation unit that accommodates transfer materials, and the transfer material accommodation unit is disposed in such a direction that the transfer materials accommodated therein are approximately vertical to the direction in which the partial conveying path extends.

18. An image forming apparatus according to claim 8, comprising a transfer material accommodation unit that accommodates transfer materials, and the transfer material accommodation unit is disposed in such a direction that the transfer materials accommodated therein are approximately vertical to the direction in which the partial conveying path extends.

19. An image forming apparatus according to claim 15, comprising a transfer material accommodation unit that accommodates transfer materials, and the transfer material accommodation unit is disposed in such a direction that the transfer materials accommodated therein are approximately vertical to the direction in which the partial conveying path extends.

20. An image forming apparatus comprising:

an image carrier which has a predetermined center of rotation and on which a toner image is formed by developing an electrostatic latent image formed thereon with a toner;

a rotary developing device that has a plurality of developing units, which are disposed about a predetermined center of rotation thereof, and in which respective color toners are accommodated, and develops the electrostatic latent image formed on the image carrier by a developing unit which is faced to the image carrier by the rotation of the rotary developing device;

an intermediate transfer member which is disposed in an approximately flat shape and circulatively moves, onto which the toner image on the image carrier is primarily transferred at a predetermined transfer position, and which has a second transfer position at which the toner image is secondarily transferred onto a transfer material;

a fixing unit which fixes the toner image on the transfer material, which has undergone the transfer of the toner image, thereon at a predetermined fixing position;

a transfer material accommodation unit that accommodates transfer materials; and

a conveying path along which a transfer material, which has been fed from the transfer material accommodation unit, passes through the secondary transfer position and the fixing position and has a partial conveying path extending approximately vertically or approximately horizontally between the secondary transfer position and the fixing

position,

wherein the primary transfer position is disposed on a side where the approximately flat-shaped intermediate transfer member moves in a direction in which the intermediate transfer member approaches the secondary transfer position,

wherein the secondary transfer position and the fixing position are disposed upstream and downstream in a sheet conveying direction of a straight line, respectively which is approximately vertical to a direction in which the partial conveying path extends, of a horizontal line and a vertical line which pass through the center of rotation of the rotary developing device, and

wherein the center of rotation of the rotary developing device is disposed in the vicinity of a straight line, which extends in a direction parallel with the direction in which the partial conveying path extends, of a horizontal line and a vertical line that pass through a transfer material accommodated in the transfer material accommodation unit at a point thereof disposed one half the length of the transfer material in a direction in which the transfer mateiral is fed from the transfer material accommodation unit.

21. An image forming apparatus according to claim 6, comprising an exposure member, which is formed in a flat shape in entirety thereof and forms an electrostatic latent image on the image carrier by exposing the image carrier, wherein the exposure member is disposed in such a direction that the

flatly expanding surface thereof is approximately vertical to the direction in which the partial conveying path extends.

22. An image forming apparatus according to claim 7, comprising an exposure member, which is formed in a flat shape in entirety thereof and forms an electrostatic latent image on the image carrier by exposing the image carrier, wherein the exposure member is disposed in such a direction that the flatly expanding surface thereof is approximately vertical to the direction in which the partial conveying path extends.

23. An image forming apparatus according to claim 8, comprising an exposure member, which is formed in a flat shape in entirety thereof and forms an electrostatic latent image on the image carrier by exposing the image carrier, wherein the exposure member is disposed in such a direction that the flatly expanding surface thereof is approximately vertical to the direction in which the partial conveying path extends.

24. An image forming apparatus according to claim 15, comprising an exposure member, which is formed in a flat shape in entirety thereof and forms an electrostatic latent image on the image carrier by exposing the image carrier, wherein the exposure member is disposed in such a direction that the flatly expanding surface thereof is approximately vertical to the direction in which the partial conveying path extends.

25. An image forming apparatus according to claim 20, comprising an exposure member, which is formed in a flat shape in entirety thereof and forms an electrostatic latent image on the image carrier by exposing the image carrier, wherein the exposure member is disposed in such a direction that the flatly expanding surface thereof is approximately vertical to the direction in which the partial conveying path extends.

26. An image forming apparatus comprising:  
an image carrier which has a predetermined center of rotation and on which a toner image is formed by developing an electrostatic latent image formed thereon with a toner;

a rotary developing device that has a plurality of developing units, which are disposed about the predetermined center of rotation thereof, and in which respective color toners are accommodated, and develops the electrostatic latent image on the image carrier by a developing unit which is faced to the image carrier by the rotation of the rotary developing device;

an intermediate transfer member which is disposed in an approximately flat shape and circulatingly moves, onto which the toner image on the image carrier is primarily transferred at a predetermined transfer position, and which has a second transfer position at which the toner image is secondarily transferred onto a transfer material,

a fixing unit which fixes the toner image on the transfer material, which has undergone the transfer of the toner image,

thereon at a predetermined fixing position;

a conveying path along which the transfer material passes through the secondary transfer position and the fixing position approximately vertically toward a discharge unit disposed in an upper portion of the image forming apparatus;

discharge members that discharge the transfer material toward the discharge unit;

a first support roll that supports the intermediate transfer member from the inside thereof at the secondary transfer position; and

a second support roll that supports the intermediate transfer member from the inside thereof at a position on the upstream side of the secondary transfer position in a moving direction of the intermediate transfer member and forms a short side of the approximately flat-shaped intermediate transfer member which extends upstream of the transfer material conveying direction in cooperation with the first support roll,

wherein the intermediate transfer member is disposed so as to incline downstream in a sheet conveying direction,

wherein the image carrier is disposed in contact with a side of the approximately flat-shaped intermediate transfer member where the intermediate transfer member moves in a direction in which the intermediate transfer member approaches the second support,

wherein the overall image carrier is disposed downstream of a first horizontal line with which the intermediate transfer member comes into contact at the most upstream side portion

thereof in the sheet conveying direction,

wherein the overall image carrier is disposed nearer to the partial conveying path than a vertical line with which the intermediate transfer member comes into contact at the portion thereof farthest from the partial conveying path,

wherein the discharge members are disposed downstream of a second horizontal line that is in contact with the most downstream portion of the intermediate transfer member in the transfer material conveying direction, and

wherein at least a part of the discharge unit is disposed upstream of the second horizontal line in the sheet conveying direction.

27. An image forming apparatus according to claim 26, wherein a developing position at which an electrostatic latent image on the image carrier is developed by the rotary developing device is disposed downstream of the first horizontal line in the transfer member conveying direction as well as on a side nearer to the partial conveying path than the vertical line.

28. An image forming apparatus according to claim 26, wherein the primary transfer position is disposed in a range of about two third a long side portion of the intermediate transfer member where the intermediate transfer member moves in a direction in which the intermediate transfer member approaches the second support roll upstream of the long side portion in the moving direction of the intermediate transfer

member.

29. An image forming apparatus according to claim 26, wherein the image carrier is disposed approximately at the center of a long side portion of the intermediate transfer member where the intermediate transfer member moves in a direction in which the intermediate transfer member approaches the second support roll in a state that the image carrier is in contact with the intermediate transfer member in a predetermined region in the moving direction thereof.

30. An image forming apparatus according to claim 26, wherein the fixing unit comprises a pair of rotating members that rotate while clamping therebetween a transfer material, which has undergone the transfer of a toner image, and fix the toner image on the transfer material formed thereon, and the pair of overall rotating members are disposed upstream of the second horizontal line in the transfer material conveying direction.